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Removal of the Canadian
Tariffs on Imports from the
United States - The Regional
Impact in the Short-Run

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The computer programme was made by A.B. Sim.

Removal of the Canadian Tariffs on Imports from the United States
Regional Impacts in the Short Run

A. Introduction

There exists considerable diversity of regional interests in Canada as witnessed by recent debates on the constitution, Quebec's sovereignty association, domestic energy policies etc. The diversity can be attributed to

- differences in resource endowments and in cultures
- the effect of Federal policies
- the existence of non tariff barriers among provinces

These factors have created substantial differences in the industrial bases among provinces. As a consequence, bilateral free trade (BFT) with the United States may have large and assymetrical regional impacts.

One would like to assess the degree to which trade liberalization with the United States will have such assymetrical effects on different Canadian regions. To do so we have developed a general equilibrium, interregional, neoclassical model of Canada. Up to now we have implemented the short-run version of this model. Using this model we have simulated the effects of a unilateral removal of tariffs towards the United States from their 1979 level. The results are presented in this paper.

1. Background

The effects of trade liberalization depend on

- factor endowment considerations
- leisure related to the industrial structure of a region or a country

Summary of theoretical implications

(i) Factor endowments:

Free trade is likely to result in expansion of industries which utilize intensively the factor which is relatively abundant in the region.

(ii) Industrial structure:

The outcome of trade liberalization depends on the presence of scale economies and the pricing policies of the firms.

Assume that there exist scale economies in one group of the manufacturing sector and consider the pricing policies.

(a) E-S hypothesis: domestic firms set prices equal to the import prices plus tariff for similar products from abroad. BFT is likely to result in increased efficiency of the manufacturing sector. Unilateral trade liberalization is likely to lead to

- deterioration of the terms of trade
- longer production runs
- greater rationalization

The gains from unilateral trade liberalization depend on the relative strengths of these effects. The last two effects should cause

- lower adjustment costs to the new situation
- lower production costs (because of the presence of scale economies)
- smaller interregional movement of labour and because adjustments are likely to take place within industries rather than across regions

(b) Monopolistically competitive pricing: profit maximization. Trade liberalization is likely to lead to greater rationalization because domestic producers face increased competition which eliminates unprofitable lines of production. The outcome on prices and production runs is uncertain and depends on the

- elasticity of domestic and foreign demand
- elasticity of substitution between products

Conjecture: The more relevant factor in evaluating the effects of trade liberalization in the short-run is the industrial structure of the economy. In the long-run factor endowment considerations are likely to dominate.

2. Modeling the effects of trade liberalization.

General equilibrium models (GEM) are well suited for the purpose of simulating the effects of trade liberalization.

Advantages:

- they can incorporate detailed interdependencies among producers, consumers, policy makers, economic regions and national economies
- they are flexible tools of policy analysis, capable of being tailored to specific questions and to the needs of different policy makers

Shortcomings:

- in their present state GEM's do not take time explicitly into account. They are more suited for comparative statics
- they encourage arbitrariness by model builders

Several general equilibrium models have been constructed for the Canadian economy as a whole.* To our knowledge no interregional GEM has been implemented so far.

3. Modeling of Regional Economies.

3a Advantages of interregional models

Microeconomic decisions concerning the

- location of firms
- investment planning
- labour supply

are usually taken at the local level.

Nation-wide models neglect regional feedbacks. This can lead to hasty conclusions about the desirability of certain policies. One might conclude, for example, that trade liberalization would have insignificant effects on the GNP and the structure of production of the country as a whole. However, trade liberalization might result in large scale relocation of industries and of labour across regions and, thus, require significant adjustment costs.

The movement of factors across regions as a result of trade liberalization is larger:

- the more distorted is the pre-liberalization regional structure of production (particularly if the conjecture above is valid)
- the longer it takes to reach the post-liberalization equilibrium and the more unequal are the regional speeds of adjustment

Under these conditions the restructuring of the regional economies might invalidate the predictions of economy-wide models.**

Interregional models overcome such problems by focusing on regional feedbacks. The need for interregional models parallels the realization that economy-wide models which use "...a single country model to represent a very open economy like Canada's may be inappropriate".

* R. Broadway and J. Treddenick [4], R. Harris and D. Cox [7] and J. Whalley [12].

All of them have been used to simulate the effects of some form of trade liberalization with the United States. The results vary from "no change" to "substantial gains." It is not within the goal of this paper to review nature and implications of economy-wide GEM's. The interested reader is referred to R.R. Wigle (13) for a summary of the results and a comparison of the models.

** The same holds for "top-down" regional models.

*** See R. Wigle [13].

3b Difficulties.

In addition to the problems associated with GEM's, in general, the modeling of interregional economies faces added complications. They are related to the availability of data and to the modeling of processes which are predominantly of national character:

- Missing or unavailable statistics. For example, data on interregional trade flows are only rough estimates, there are no data on the elasticity of substitution among Canadian products produced in different regions, several series are not available because of confidentiality.
- Modeling of investment decisions of firms operating at the national level
- Modeling of monetary and fiscal policies which respond mainly to national conditions

As a consequence a certain degree of arbitrariness is inevitable.

B. The Model.

The model presented here is the short-run version of an interregional general equilibrium neoclassical model of Canada developed by the author. The difference between the present version and its long-run counterpart lies in the number of markets which clear.

Basic assumption:

- in the short-run prices adjust to equilibriate the demand and supply of commodities and if labour at the regional level - Capital stocks are fixed everywhere and the supply of labour is fixed across regions
- in the long-run capital and labour move in response to earning differentials across regions. In equilibrium wages and returns to capital are equalized throughout Canada.

In this paper we present preliminary results based on the short-run version. So far no attempt has been made to link the two versions with a dynamic adjustment process.

1. Comments.

As indicated above, prices and wages are determined in a competitive fashion. We have also conjectured above that the industrial structure of an economy is likely to determine the short-run effects of trade liberalization.* This being a competitive short-run model seems to contradict that conjecture. We have followed this route because our primary goal is the implementation of the long-run version of this model. And on theoretical grounds, the market structure that will evolve in the long-run is not obvious. Here we have assumed that the structure can be better approximated by a competitive one. This eliminates the need to arbitrarily choose the elasticity of demand for different products at the post-liberalization equilibrium.

It was decided to experiment with the short-run first in order to become familiar with the data and gain appreciation of the difficulties involved. In addition the short run results would capture tendencies for long-run factor movements and serve as a check of how reasonable the model is.

We chose to simulate the effects of a unilateral tariff elimination towards the United States. In the context of our model this scenario captures the (short-run) tendencies which would result from the abolition of tariffs. It would be inappropriate to evaluate the effects of a bilateral removal of tariffs without a full-fledged model of the United States.

2. Description.

The basis for the model is the 1974 interregional input-output model of Statistics Canada. For the rest, the economy of each region is modelled in a manner similar to that of A. Anastasopoulos and W. Sims (2) or (3).

There are eight domestic regions: (Maritimes, Quebec, Ontario, Saskatchewan, Manitoba, British Columbia, Yukon and Northwestern Territories) and two foreign ones (United States and the rest of the world (R.O.W.)). The foreign regions are not modelled explicitly; they are represented by demand functions for exports from the various Canadian regions. There are fifty-nine commodities derived from Aggregation M of Statistics Canada.

* It can be safely assumed that the industrial structure of the various Canadian regions is anything but competitive.

Commodities produced in a given region are assumed to be imperfect substitutes to similar commodities produced in every other region.

Each Canadian region is represented by a maximum of thirty two industrial sectors, and a vector of:

- consumption demands by commodity
- investment demands by commodity
- inventories
- total exports by region
- total imports by region
- gross government expenditures

All domestic and foreign regions are interconnected through a matrix of commodity flows. An entry in this matrix is the demand (for final and intermediate use) by a region for a given commodity produced in one of the remaining regions.

The industrial sectors of the various domestic regions are not identical, in line with the Statistics Canada Interregional model. In addition, several sectors in each region have been merged because of data problems.

Production in each sector is characterized by fixed coefficients between intermediate inputs and value added and substitutability between capital and labour. The latter is represented by Cobb-Douglas production functions. In the present version the capital stock is fixed everywhere. Labour is determined from profit maximization. Wages are set by market clearing conditions. The base-year wage differentials persist into the future. The difference between revenues and all production costs are economic rents.

Consumer expenditures in each Canadian region are determined by a short-run consumption function. These are then allocated into commodities with the aid of demand functions (one for each commodity). These functions correspond to an indirect addilog utility function, and their coefficients have been estimated at the national level only.***

* Indirect addilog utility functions allow for different price and income elasticities for the various commodities. See ~~Iwai~~.

K. Iwai: Disequilibrium Dynamics. Yale, 1981.

** That is the coefficients of the demand function for a given commodity is the same in all regions.

The demand for investment and government expenditures have been maintained fixed in real terms at the base-year level.

The origin of a commodity demanded (either as an input or for final demand purposes) in a region, is a function of

- Its relative prices across regions
- The elasticity of substitution between this commodity and similar commodities produced elsewhere

The balance of payments of each region and of Canada as a whole is simply the difference between its total exports and imports. In the case of Canada, it is assumed that international capital movements absorb the deficit.

3. Implementation.

The year 1974 has been used as the base-year. The data for the Canadian economy (or employment, consumption, exports by country, imports...etc.) have been allocated to regions by assuming the proportionabilities exhibited by the 1974 interregional input-output model of statistics Canada.* The result is the control solution for each province presented below in Appendix A.

The income and price elasticities for the demand functions of the various commodities were estimated at the Canadian level as follows: We obtained time series on consumption in real and nominal terms from the Canadian input-output tables. By dividing nominal quantities by real quantities, we derived a series of price indices for each commodity classification. These, together with the series on real quantities were used to estimate the parameters of the demand function for each commodity. The results appear to be reasonable. It was assumed that the same parameters hold for all regions. We are aware that this procedure is not satisfactory for several reasons. Input-output statistics are not always constructed from primary data.* In addition the "sample" size is not adequate (seven degrees of freedom on the average). However, there is not much more one can do if one chooses to work at this level of disaggregation.

A similar procedure was followed in estimating the elasticities of substitution between imported and domestically produced commodities.

* At present we are in the process of (a) constructing an artificial base-year, to represent a long-run situation and (b) incorporating the 1979 version of the interregional I-O model.

These elasticities were taken to be representative of the substitutability of commodities in a region irrespective of where they are produced.***

Finally, export elasticities were borrowed from A. Anastasopoulos and W. Sims.**

D. The Results.

The unilateral removal of tariffs (from their 1979 level) would have negative but insignificant effects on aggregate economic magnitudes of each region and the country as a whole.**** This is to be expected to some degree because of the way short-run has been defined: Prices and wages adjust until markets clear and employment reaches its 1974 level. Capital and the level of investment do not change. Therefore, loosely speaking, the removal of tariffs would affect aggregate magnitudes to the extent that it would bias employment towards less productive lines of production. Such restructuring in the base-year pattern of production does indeed take place, but its overall effects are negligible. What is more significant though, is the magnitude of such restructuring and its implications for the long run.

a) The sectoral effects seem to be uniform across regions with minor differences. The sectors which are seriously hurt (in percentage terms) are Tobacco, Rubber and Plastics and Leather and to a lesser degree Chemical Products, Machinery, Primary Metal and Metal Fabricating Industries. In general, the same sectors suffer a considerable decrease in economic rents. As a consequence one would anticipate that the long-run effects would be more severe because capital would tend to leave these industries. The sectors which benefit are usually the one based on the natural resources.

b) In all regions the manufacturing industries tend to decline relative to the rest. This is particularly so for the employment of manufacturing in Quebec (2.4%), Ontario (2.3%) and the Maritimes (2.1%). The decline in the remaining regions is less pronounced. The corresponding figure for Canadian manufacturing is 2.15%. In scenarios where we simulated a

* This matter was discussed with individuals from the Structural Division of Statistics Canada, who thought that our approach is "a good first approximation".

** See A. Anastasopoulos and W. Sims (2) or (3).

*** The elasticities of substitution among Canadian goods were taken to be 10% higher than the corresponding values for the elasticities of substitution between imports and Canadian goods.

**** The GNP for Canada as a whole declines by .14%.

unilateral reduction in tariffs towards the United States and the rest of the world we obtain similar results.* In that case, the decline in employment in manufacturing is as follows, Quebec 4.36%, Maritimes 4.26%, Manitoba 4.17%, Ontario 3.58% and Canada 3.77%.

c) For Canada as a whole .6% of workers would move between sectors. The relocation of labour is again, more pronounced in Ontario (.81%) and Quebec (.74%).** This finding lends additional support to the comments above related to manufacturing: It is in Ontario and Quebec where most of the manufacturing industries of the country are located. And it is in these provinces where a higher percentage of labour would have to be relocated if manufacturing declines.

d) What is the most striking change is shown in Tables 30 and 31 on Trade Flows. Trade flows among provinces decline (almost without exception) and flows between all provinces and the United States increase. On the other hand exports to the rest of the world rise and imports fall. This is caused by the decline in domestic prices (not shown) relative to world prices as a result of the removal of tariffs. It seems that the removal of Canadian tariffs towards the United States will divert the flow of commodities along north-south routes. A consequence of the new patterns of trade the overall trade deficit of Canada worsens by 33% (it deteriorates by 125% versus the United States and improves by 44% towards the remaining countries). Similar results hold for the unilateral removal of tariffs by Canada towards all other countries. The Canadian deficit deteriorates by 47%, (29% towards the United States and 61% towards the remaining countries).

* These results are not reported here.

X *

APPENDIX A

In this appendix the sectoral results for each region are presented (Tables 1-28). These are followed by the aggregate results (Tables 29-31).

For each region we show first the correspondence between the title of a sector (as shown in the 1974 interregional input-output model of Statistics Canada) and its numbering in our computer programme. The base-year (or control solution) for the region follows. Finally, the percentage changes from the control solution are presented.

TABLE 1

Newfoundland: Industry Category

1. Agriculture
2. Forestry
3. Fish, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Leather and textile industries
7. Wood industries
8. Furniture and fixture industries
9. Paper, transportation equipment and coal industries
10. Printing and publishing industries
11. Metal fabricating industries
12. Non-metallic products industries
13. Chemical and chemical products industries
14. Miscellaneous manufacturing industries
15. Construction industry
16. Transportation and storage
17. Communications
18. Electrical power, gas and other utilities
19. Wholesale trade
20. Retail trade
21. Owner occupied dwellings
22. Other finance insurance and real estate
23. Institutions and commercial services
24. Transportation margins
25. Operating, office, laboratory, food, travel, advertising & promotion

TABLE 2

Prince Edward Island: Industry Category

1. Agriculture
2. Forestry
3. Fish, hunting and trapping
4. Food and beverage industry
5. Leather and textile industries
6. Wood, furniture and fixture industries
7. Printing and publishing industries
8. Metal fabricating industries
9. Machinery and transportation equipment industries
10. Non-metallic mineral products industries
11. Chemical, chemical products and miscellaneous manufacturing industries
12. Construction industry
13. Transportation and storage
14. Communications
15. Electrical power, gas and other utilities
16. Wholesale trade
17. Retail trade
18. Owner occupied dwellings
19. Other finance, insurance and real estate
20. Institutions and commercial services
21. Transportation margins
22. Travel, advertising, food, promotion, laboratory, operating and office

TABLE 3

Nova Scotia: Industry Category

1. Agriculture
2. Forestry
3. Fish, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Rubber, plastics, textile, knitting and clothing industries
7. Wood industries
8. Furniture and fixture industries
9. Paper and allied industries
10. Printing and publishing industries
11. Machinery and primary metal industries
12. Metal fabricating industry
13. Transportation equipment industries
14. Electrical products industries
15. Non-metallic mineral products industries
16. Petroleum and coal products industries
17. Chemical and chemical products industries
18. Miscellaneous manufacturing industries
19. Construction industry
20. Transportation and storage
21. Communication
22. Electrical power, gas and other utilities
23. Wholesale trade
24. Retail trade
25. Owner occupied dwellings
26. Other finance, insurance and real estate
27. Institutions and commercial services
28. Transportation margins
29. Travel, advertising, food, promotion, laboratory, operating and office

TABLE 4

New Brunswick: Industry Category

1. Agriculture
2. Forestry
3. Fish, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Rubber, plastics and leather industries
7. Textile, knitting and clothing industries
8. Wood industries
9. Furniture and fixture industries
10. Paper and allied industries
11. Printing and publishing industries
12. Machinery and primary metal industries
13. Metal fabricating industries
14. Transportation equipment industries
15. Electrical products industries
16. Non-metallic mineral products industries
17. Chemical and chemical products industries
18. Miscellaneous manufacturing industries
19. Construction industry
20. Transportation and storage
21. Communication
22. Electrical power, gas and other utilities
23. Wholesale trade
24. Retail trade
25. Owner occupied dwellings
26. Other finance, insurance and real estate
27. Institutions and commercial services
28. Transportation margins
29. Operating, office, laboratory, food, travel, advertising and promotion

TABLE 5

Aggregation of Maritime Provinces

Sector	Newfoundland	PEI	Nova Scotia	New Brunswick
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	-	4	4
5	5	4	5	5
6	6	5	6	6,7
7	7,8	6	7,8	8,9
8	9	9	9,11,13	10,12,14
9	10	7	10	11
10	11	8	12	13
11	-	-	14	15
12	12	10	15	16
13	-	-	16	-
14	13	-	17	17
15	14	11	18	18
16	15	12	19	19
17	16	13	20	20
18	17	14	21	21
19	18	15	22	22
20	19	16	23	23
21	20	17	24	24
22	21,22	18,19	25,26	25,26
	23	20	27	27

TABLE 6
REGION 1 - MARITIMES

Control Solution							
SECTOR	EMPLOYMENT *	OUTPUT *	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	21340.	283715.	145133.	110529.	54682.	6697.	9577.
2	10610.	275551.	122897.	27283.	1679.	930.	6929.
3	17060.	161000.	97346.	64043.	1354.	23483.	9921.
4	12900.	622326.	255527.	91016.	45392.	173381.	320962.
5	27711.	1082361.	322966.	127928.	267823.	32926.	199156.
6	15355.	353303.	126754.	20532.	103395.	46892.	28226.
7	11430.	1851537.	592715.	269116.	326984.	519211.	480924.
8	8995.	67045.	41176.	13288.	132.	328.	327.
9	6779.	121618.	58762.	21160.	14257.	3844.	7344.
10	3643.	62200.	26653.	5317.	16663.	2893.	1172.
11	2195.	97796.	43688.	18667.	2528.	952.	645.
12	1200.	463775.	77352.	69218.	72198.	64708.	61025.
13	989.	118231.	33255.	13248.	24981.	23340.	30619.
14	1517.	29845.	11559.	2038.	4908.	1992.	2220.
15	39500.	2211347.	978171.	256994.	0.	0.	0.
16	46317.	956108.	472051.	151071.	3458.	1770.	362.
17	16095.	295182.	242838.	92359.	3581.	1026.	361.
18	8887.	354508.	254310.	194577.	73670.	29230.	5.
19	27122.	570251.	405434.	91855.	1887.	371.	264.
20	78218.	986853.	660035.	220289.	2953.	40.	53.
21	20500.	1454224.	738868.	599346.	0.	0.	0.
22	173000.	920353.	577608.	292452.	963.	229.	72.
Total	551363.	13339129.	6285097.	2752325.	1023490.	934243.	1160168.
Manufacturing	79814.	4247711.	1334880.	560512.	833869.	697086.	811662.
Total							

* In person years

* In thousands of dollars

TABLE 7

REGION 1 - MARITIMES

Percentage Changes

SECTOR	EMPLOYMENT	OUTPUT	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	.0050	.0012	.0056	.0059	-.0062	.0005	.0004
2	-.0148	-.0115	-.0142	-.0102	-.0015	.0057	.0025
3	.0094	.0032	.0100	.0106	.0014	-.0014	-.0003
4	.0074	.0047	.0080	.0101	-.0030	.0037	.0035
5	.0072	.0044	.0078	.0096	.0032	.0025	.0016
6	-.0842	-.0710	-.0836	-.0781	-.2172	.0176	.0136
7	-.0022	-.0012	-.0016	-.0002	-.0207	.0029	.0034
8	-.0168	-.0114	-.0162	-.0138	-.0147	.0030	.0020
9	-.0201	-.0129	-.0195	-.0175	-.0421	.0253	.0303
10	-.0602	-.0485	-.0596	-.0553	-.1168	.0192	.0207
11	-.0006	-.0003	.0000	.0016	-.0329	.0051	.0033
12	.0050	.0005	.0056	.0057	.0000	.0038	.0038
13	-.0728	-.0444	-.0722	-.0706	-.1987	.0293	.0300
14	-.0101	-.0083	-.0095	-.0041	-.0512	.0155	.0195
15	.0043	.0032	.0049	.0082	.0000	.0000	.0000
16	.0036	.0025	.0042	.0067	-.0052	.0031	.0031
17	-.0012	-.0008	-.0006	.0012	-.1640	.0187	.0187
18	.0006	.0001	.0012	.0016	-.0044	-.0004	.0018
19	.0018	.0014	.0024	.0064	-.0686	.0102	.0147
20	.0035	.0024	.0041	.0065	-.0050	.0041	.0048
21	.0027	.0005	.0033	.0036	-.0044	-.0004	.0000
22	.0046	.0023	.0052	.0063	-.0384	.0107	.0107
Total	.0000	-.0013	.0006	.0035	-.0369	.0045	.0042
Manufacturing	-.0214	-.0078	-.0109	-.0032	-.0434	.0051	.0046
Total							

TABLE 8

Industry Category: Quebec

1. Agriculture
2. Forestry
3. Fishing, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Tobacco products industries
7. Rubber and plastics products industries
8. Leather industries
9. Textile industries
10. Knitting mills
11. Clothing industries
12. Wood industries
13. Furniture and fixture industries
14. Paper and allied industries
15. Printing and publishing industries
16. Primary metal industries
17. Metal fabricating industries
18. Machinery industries
19. { Transportation equipment industries
 Electrical products industries
20. Non-metallic mineral products industries
21. Petroleum and coal products industries
22. Chemical and chemical products industries
23. Miscellaneous manufacturing industries
24. Construction industry
25. Transportation and storage
26. Communication
27. Electrical power, gas and other utilities
28. Wholesale trade
29. Retail trade
30. { Owner occupied dwellings
 Other finance, insurance and real estate
31. Institutions and commercial services

TABLE 9

REGION 2 - QUEBEC

Control Solution

SECTOR	EMPLOYMENT *	OUTPUT *	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	85000.	1120782.	516672.	447723.	51248.	9395.	1733.
2	16900.	518133.	268898.	60090.	4586.	4484.	27.
3	188.	19649.	14375.	9678.	0.	4288.	3687.
4	26100.	1064150.	638921.	293118.	147692.	163286.	252036.
5	56840.	4012168.	897839.	342590.	854221.	163636.	98241.
6	5818.	317241.	127867.	60001.	204705.	1309.	877.
7	13822.	452363.	171899.	48954.	172416.	32751.	10548.
8	12564.	258666.	104119.	17336.	130140.	1891.	5910.
9	39044.	1293355.	452038.	127870.	595351.	50740.	42397.
10	16026.	412224.	146634.	36719.	199337.	9844.	11918.
11	67139.	1422644.	552119.	102616.	682182.	33629.	40746.
12	24771.	805299.	323236.	121187.	156386.	117287.	40870.
13	20051.	498289.	206543.	50395.	199916.	7317.	21619.
14	45367.	2487391.	1048506.	490119.	561058.	800759.	183966.
15	25289.	788165.	399650.	133567.	163417.	23092.	3734.
16	30267.	2576395.	523038.	143323.	670596.	632824.	477058.
17	39161.	1420694.	623929.	206725.	457421.	106381.	53622.
18	17487.	549888.	264031.	70102.	133019.	67071.	24582.
19	63698.	2533095.	871630.	135423.	783361.	516810.	323373.
20	15545.	614517.	286343.	121615.	100308.	42876.	10590.
21	3254.	1705820.	212506.	165932.	377096.	50868.	47565.
22	26779.	1348429.	514561.	193448.	531779.	90636.	62583.
23	18578.	489290.	189637.	36989.	166459.	54259.	5485.
24	11450.	5782785.	2623335.	683526.	0.	0.	0.
25	126566.	2950493.	1656482.	404156.	6618.	12186.	5118.
26	47590.	1024245.	865086.	308485.	17832.	2351.	5762.
27	23444.	828753.	640316.	456009.	65115.	10710.	0.
28	87888.	2294698.	1637545.	501685.	11132.	2605.	811.
29	240412.	3172879.	2136021.	695238.	9371.	3069.	1375.
30	111600.	5245184.	2893255.	1768135.	0.	0.	0.
31	572400.	4429536.	2870937.	1339108.	7491.	2043.	0.
Total		1891038.	52437220.	24677968.	9571862.	7460252.	3018398.
Manufacturing		541500.	23985933.	7916125.	2604911.	7139166.	2803981.
Total							1465683.

* In person-years

* In thousands of dollars.

TABLE 10

REGION 2 - QUEBEC

Percentage Changes

TABLE 11

Industry Category: Ontario

1. Agriculture
2. Forestry
3. Fishing, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Tobacco products industries
7. Rubber and plastics products industries
8. Leather industries
9. Textile industries
10. Knitting mills
11. Clothing industries
12. Wood industries
13. Furniture and fixture industries
14. Paper and allied industries
15. Printing and publishing industries
16. Primary metal industries
17. Metal fabricating industries
18. Machinery industries
19. Transportation equipment industries
20. Electrical products industries
21. Non-metallic mineral products industries
22. Petroleum and coal products industries
23. Chemical and chemical products industries
24. Miscellaneous manufacturing industries
25. Construction industry
26. Transportation and storage
27. Communication
28. Electrical power, gas and other utilities
29. Wholesale trade
30. Retail trade
31. { Owner occupied dwellings
 { Other finance, insurance and real estate
32. Institutions and commercial services

TABLE 12

REGION 3 - ONTARIO

Control Solution

SECTOR	EMPLOYMENT *	OUTPUT *	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	120000.	2471449.	1472314.	1277849.	238621.	71876.	37027.
2	10400.	325688.	153669.	33542.	2570.	4773.	136.
3	1425.	18215.	15173.	9999.	0.	10967.	4370.
4	33200.	1934358.	1347780.	867529.	221298.	196985.	210431.
5	87099.	6090743.	1551665.	639390.	1390324.	223948.	158142.
6	3551.	405398.	97672.	60273.	205067.	2018.	68960.
7	34718.	1330711.	576375.	213236.	405512.	162435.	14753.
8	12332.	289767.	106488.	12274.	113852.	7409.	9179.
9	31991.	1107883.	432079.	146371.	431947.	121648.	15211.
10	7341.	153271.	63761.	10768.	66747.	4877.	2397.
11	22209.	452880.	204699.	48503.	190859.	14221.	6872.
12	20507.	662368.	286771.	95453.	81926.	93588.	6228.
13	24693.	689082.	284671.	61786.	239942.	40559.	3438.
14	47404.	2485499.	1057527.	492239.	442426.	688839.	40466.
15	47434.	1318339.	708692.	175020.	212150.	43636.	5617.
16	71487.	4853809.	1516995.	525291.	828021.	913235.	511253.
17	89235.	3674847.	1542643.	502742.	994470.	236748.	217841.
18	56776.	2371134.	927846.	230931.	539728.	561959.	210226.
19	114121.	8622014.	2433959.	858828.	1234840.	4850610.	43478.
20	90410.	3302555.	1399410.	452347.	1236391.	259681.	205875.
21	28734.	1184929.	564945.	221881.	205874.	88585.	22579.
22	9439.	1516075.	172008.	23989.	115951.	68203.	6149.
23	44340.	2963301.	1050428.	493896.	947129.	291897.	47066.
24	39909.	1332953.	527613.	151963.	430362.	113419.	61327.
25	165200.	8967678.	3996751.	1017284.	0.	0.	0.
26	143804.	3559434.	1960572.	575108.	4148.	15740.	100.
27	63568.	1554513.	1253705.	488581.	22377.	5212.	5114.
28	39829.	1413421.	1113775.	727366.	2.	104803.	0.
29	144088.	3581299.	2548079.	819482.	17450.	4087.	2102.
30	387612.	4719981.	3294556.	870448.	32176.	3347.	6610.
31	174500.	9610157.	5846899.	3463381.	0.	1.	0.
32	851700.	6657137.	4363493.	2006144.	15601.	3163.	1942.
Total	3019056.	89620888.	42873011.	17573892.	10867761.	9208469.	1924887.
Manufacturing	883730.	44807558.	15506246.	5417180.	10313518.	8787514.	1657054.
Total							

* In person-years

* In thousands of dollars

TABLE 14

Industry Category: Manitoba

1. Agriculture
2. Forestry
3. Fishing, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Rubber and plastics products industries
7. Leather industries
8. Textile, knitting and clothing industries
9. Wood industries
10. Furniture and fixture industries
11. Petroleum, paper and allied industries
12. Printing and publishing industries
13. Primary metal industries
14. Metal fabricating industries
15. Machinery industries
16. Transportation equipment industries
17. Electrical products industries
18. Non-metallic mineral products industries
19. Chemical and chemical products industries
20. Miscellaneous manufacturing industries
21. Construction industry
22. Transportation and storage
23. Communication
24. Electrical power, gas and other utilities
25. Wholesale trade
26. Retail trade
27. { Owner occupied dwellings
 { Other finance, insurance and real estate
28. Institutions and commercial services

TABLE 15

REGION 4 - MANITOBA

Control Solution

SECTOR	EMPLOYMENT *	OUTPUT*	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	46046.	836584.	541315.	511871.	183639.	28927.	302921.
2	705.	21500.	10796.	2447.	356.	4.	0.
3	345.	8328.	6871.	4518.	0.	83.	3000.
4	7500.	332964.	227631.	138860.	60295.	13266.	29936.
5	1101.	833491.	154108.	43605.	327725.	32071.	29629.
6	455.	13314.	4128.	884.	3262.	746.	765.
7	691.	20279.	7883.	2223.	15610.	485.	878.
8	8038.	172871.	62832.	12672.	96447.	16201.	181.
9	1979.	58576.	22844.	4629.	22414.	2028.	1458.
10	2102.	54419.	21289.	4168.	29551.	184.	662.
11	2900.	294458.	81490.	50346.	92255.	25472.	124.
12	4226.	101670.	58244.	18310.	22008.	1687.	234.
13	2864.	324808.	62779.	26483.	98769.	32875.	126315.
14	4699.	177683.	81277.	31150.	61578.	12581.	12187.
15	4291.	165343.	63875.	20816.	55931.	57409.	18892.
16	5887.	148311.	69464.	7109.	44887.	35045.	8405.
17	1789.	66978.	24523.	8343.	33243.	3861.	45.
18	1446.	59463.	27856.	12334.	6268.	2295.	179.
19	890.	65232.	20560.	11482.	22461.	11434.	4543.
20	1160.	20705.	10613.	840.	4473.	930.	385.
21	17700.	996921.	448406.	119286.	0.	0.	0.
22	30969.	716692.	427047.	98910.	1579.	1253.	292.
23	9740.	154788.	121842.	30936.	2409.	278.	0.
24	5491.	163719.	137288.	96912.	7993.	11488.	0.
25	20255.	445673.	318163.	100174.	2378.	350.	151.
26	45545.	544787.	401238.	95540.	6237.	466.	197.
27	17200.	880380.	542539.	359492.	0.	0.	0.
28	103300.	644064.	421022.	180642.	617.	127.	53.
Total		349314.	8324001.	4377922.	1994981.	1202385.	541432.
Manufacturing		44518.	2577601.	773764.	255393.	936882.	204882.

* In person-years

* In thousands of dollars.

TABLE 16

REGION 4 - MANITOBA

Percentage Changes

SECTOR	EMPLOYMENT	OUTPUT	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	- .0010	- .0001	.0010	.0011	- .0132	.0014	.0006
2	.0034	.0026	.0054	.0076	.0017	.0004	.0000
3	.0005	.0002	.0025	.0028	.0000	- .0035	- .0035
4	- .0030	- .0012	- .0010	- .0006	- .0021	.0032	.0026
5	.0061	.0044	.0081	.0098	.0012	.0041	.0070
6	- .0909	- .0722	- .0891	- .0870	- .0879	.0273	.0267
7	- .1937	- .1432	- .1921	- .1908	- .0776	.1147	.1205
8	- .0079	- .0063	- .0059	- .0034	- .0175	.0395	.0091
9	- .0012	- .0010	.0008	.0033	- .0014	.0058	.0059
10	- .0272	- .0219	- .0252	- .0227	- .0239	.0215	.0138
11	.0007	.0003	.0027	.0031	- .0064	.0016	.0184
12	- .0153	- .0105	- .0133	- .0120	- .0295	.0191	.0210
13	- .0146	- .0086	- .0128	- .0120	- .0310	.0121	.0116
14	- .0299	- .0186	- .0280	- .0270	- .0386	.0169	.0110
15	- .0237	- .0160	- .0217	- .0204	- .0388	.0169	.0169
16	.0032	.0029	.0052	.0108	- .0021	.0087	.0088
17	- .0536	- .0357	- .0517	- .0505	- .0669	.0320	.0135
18	- .0069	- .0039	- .0049	- .0041	- .0292	.0084	.0028
19	- .0329	- .0147	- .0310	- .0305	- .0493	.0401	.0262
20	- .0118	- .0109	- .0098	- .0025	- .0236	.0116	.0115
21	.0043	.0032	.0063	.0081	.0000	.0000	.0000
22	.0033	.0025	.0053	.0074	.0009	.0082	.0083
23	.0012	.0009	.0032	.0051	- .0674	.0323	.0000
24	- .0006	- .0002	.0014	.0016	- .0230	- .0020	.0000
25	.0017	.0012	.0037	.0051	- .0298	.0203	.0218
26	.0031	.0024	.0051	.0071	- .0007	.0045	.0029
27	.0016	.0005	.0036	.0039	- .0230	- .0020	.0000
28	.0043	.0025	.0063	.0072	- .0235	.0114	.0114
Total	.0000	- .0009	.0013	.0019	- .0159	.0121	.0051
Manufacturing	- .0173	- .0061	- .0108	- .0101	- .0172	.0146	.0121
Total							

TABLE 17

Industry Category: Saskatchewan

1. Agriculture
2. Forestry
3. Fishing, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Rubber, plastics and leather industries
7. Textile, knitting and clothing industries
8. Wood industries
9. Furniture and fixture industries
10. Paper and allied and primary metal industries
11. Printing and publishing industries
12. Metal fabricating industries
13. Machinery industries
14. Transportation equipment industries
15. Electrical products industries
16. Non-metallic mineral products industries
17. Petroleum and coal products industries
18. Chemical and chemical products industries
19. Miscellaneous manufacturing industries
20. Construction industry
21. Transportation and storage
22. Communication
23. Electrical power, gas and other utilities
24. Wholesale trade
25. Retail trade
26. { Owner occupied dwellings
Other finance, insurance and real estate
27. Institutions and commercial services

TABLE 18

REGION 5 - SASKATCHEWAN

Control Solution

SECTOR	EMPLOYMENT *	OUTPUT*	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	98496.	2303784.	1861445.	1801568.	606580.	10398.	1496232.
2	915.	31350.	13690.	3194.	441.	12.	430.
3	280.	5330.	4595.	3063.	0.	63.	3138.
4	5800.	772905.	416844.	349339.	276294.	442583.	10690.
5	5900.	457817.	92085.	33770.	176831.	7494.	25636.
6	170.	4950.	1517.	679.	1902.	4.	3.
7	915.	21590.	9200.	3482.	15235.	148.	0.
8	1241.	49745.	17855.	5238.	17753.	9464.	138.
9	140.	3107.	1256.	238.	876.	45.	1.
10	1945.	163243.	71126.	43461.	48114.	56733.	37110.
11	1655.	37004.	21546.	6290.	666.	23.	3.
12	1323.	51719.	25921.	11978.	13475.	1953.	2043.
13	1422.	47013.	19400.	5189.	11904.	8259.	7.
14	597.	16794.	5850.	1229.	8298.	59.	4.
15	323.	16941.	5695.	2436.	4321.	67.	80.
16	898.	38227.	16845.	7343.	4300.	575.	5.
17	478.	144381.	14014.	7775.	41525.	907.	0.
18	244.	18221.	6121.	2987.	6296.	417.	1.
19	336.	6694.	3012.	376.	571.	9.	0.
20	11300.	861707.	388732.	98777.	0.	0.	0.
21	17905.	382217.	260244.	116587.	699.	11.	0.
22	6810.	131349.	104963.	42759.	1461.	9.	0.
23	3025.	128897.	93166.	65720.	1328.	14.	1.
24	12394.	310155.	221598.	76058.	1162.	26.	48.
25	33606.	519438.	326946.	122848.	10778.	689.	1828.
26	10200.	896461.	569840.	493478.	0.	0.	0.
27	77200.	494410.	309917.	157111.	134.	2.	0.
Total		295518.	7915449.	4883434.	3462974.	1250944.	539964.
Manufacturing		17587.	1077446.	311453.	132471.	352068.	86157.
Total							65031.

* In person-years

* In thousands of dollars

TABLE 19

REGION 5 - SASKATCHEWAN

Percentage Changes

SECTOR	EMPLOYMENT	OUTPUT	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. N.	
1	- .0020	- .0001	- .0006	- .0006	- .0098	.0015	.0006	
2	.0018	.0014	.0033	.0022	- .0016	.0000	.0000	
3	- .0003	- .0001	.0012	.0010	.0000	- .0014	- .0014	
4	.0003	.0001	.0018	.0017	- .0048	- .0006	- .0005	
5	.0033	.0021	.0048	.0042	- .0011	.0020	.0030	
6	- .0974	- .0550	- .0961	- .0965	- .0312	.0310	.0278	
7	- .0182	- .0113	- .0167	- .0172	- .0196	.0330	.0000	
8	.0003	.0002	.0017	.0010	- .0051	.0030	.0029	
9	- .0168	- .0137	- .0154	- .0167	- .0344	.0030	.0040	
10	- .0028	- .0011	- .0013	- .0015	- .0115	.0075	.0119	
11	- .0167	- .0119	- .0155	- .0161	- .0244	.0180	.0151	
12	- .0170	- .0092	- .0155	- .0159	- .0311	.0160	.0163	
13	- .0280	- .0206	- .0266	- .0274	- .0578	.0120	.0207	
14	.0044	.0034	.0058	.0046	.0007	.0120	.0538	
15	- .0608	- .0353	- .0595	- .0599	- .0867	.0210	.0148	
16	- .0025	- .0014	- .0010	- .0014	- .0216	.0057	.0006	
17	- .0067	- .0030	- .0053	- .0055	- .0139	.0028	.0000	
18	- .0657	- .0342	- .0643	- .0646	- .0441	.0093	.0124	
19	- .0076	- .0067	- .0062	- .0084	- .0246	.0092	.0580	
20	.0030	.0022	.0044	.0035	.0000	.0000	.0000	
21	.0013	.0007	.0027	.0023	- .0059	.0038	.0000	
22	- .0013	- .0008	.0002	- .0003	- .0886	.0311	.0000	
23	.0001	.0000	.0016	.0014	- .0028	.0028	.0000	
24	.0011	.0007	.0026	.0020	- .0184	.0131	.0057	
25	.0018	.0011	.0033	.0028	- .0008	.0020	.0019	
26	.0003	.0000	.0018	.0017	- .0045	.0000	.0000	
27	.0029	.0014	.0044	.0040	- .0243	.0088	.0000	
Total		.0000	.0000	.0009	.0004	- .0089	.0007	.0009
Manufacturing		- .0086	- .0031	- .0064	- .0066	- .0105	.0073	.0085
Total								

TABLE 20

Industry Category: Alberta

1. Agriculture
2. Forestry
3. Fishing, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Rubber and plastics industries
7. Leather industries
8. Textile, knitting and clothing industries
9. Wood industries
10. Furniture and fixture industries
11. Paper and allied, and petroleum industries
12. Printing and publishing industries
13. Primary metal industries
14. Metal fabricating industries
15. Machinery industries
16. Transportation equipment industries
17. { Electrical products industries
Non-metallic mineral products industries
18. Petroleum and coal products industries
19. Chemical and chemical products industries
20. Miscellaneous manufacturing industries
21. Construction industry
22. Transportation and storage
23. Communication
24. Electrical power, gas and other utilities
25. Wholesale trade
26. Retail trade
27. { Owner occupied dwellings
Other finance, insurance and real estate
28. Institutions and commercial services

TABLE 21

REGION 6 - ALBERTA

Control Solution

SECTOR	EMPLOYMENT *	OUTPUT*	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	84828.	1788353.	1183771.	1099194.	181474.	23232.	687670.
2	2065.	47603.	18831.	4325.	729.	136.	2328.
3	210.	5547.	4785.	3147.	0.	31.	3766.
4	29900.	4862552.	2774527.	2257424.	1709907.	2058026.	122008.
5	14869.	1483185.	234547.	80241.	653684.	37220.	36144.
6	1349.	53967.	20572.	6043.	25787.	1397.	1614.
7	276.	8156.	2868.	670.	2315.	908.	2117.
8	2185.	71009.	30049.	8600.	41239.	1774.	95.
9	6241.	244240.	73798.	9961.	64641.	25720.	13602.
10	1579.	43181.	19478.	4719.	9193.	214.	114.
11	2155.	153971.	80968.	54114.	16475.	93409.	46.
12	4138.	113352.	65960.	22414.	4317.	224.	31.
13	3343.	247913.	86488.	43225.	90651.	54772.	11660.
14	5681.	252877.	122273.	55750.	50008.	7074.	19503.
15	2963.	104419.	41757.	9231.	16264.	12239.	705.
16	4602.	176482.	55735.	11741.	60486.	13412.	263.
17	5457.	233088.	104789.	44747.	58099.	2932.	1715.
18	1360.	484676.	37355.	17669.	134085.	43111.	3679.
19	2684.	226892.	84950.	50470.	80401.	53790.	1266.
20	1393.	33168.	16080.	2971.	2408.	832.	72.
21	46800.	2975370.	1259468.	335344.	0.	0.	0.
22	41394.	1227345.	668552.	312818.	3026.	1071.	40.
23	17280.	385910.	301294.	139599.	6431.	188.	0.
24	7526.	274844.	267032.	204810.	201.	0.	5.
25	35001.	793700.	566885.	187462.	2434.	323.	379.
26	94784.	1078088.	743121.	211034.	27135.	688.	767.
27	27600.	2903995.	2075877.	1758821.	0.	0.	0.
28	189100.	1627160.	1075988.	518711.	409.	151.	0.
Total	636763.	21901043.	12017819.	7455256.	3242000.	2432875.	909589.
Manufacturing							
Total	60275.	3930576.	1077688.	422567.	1310253.	349029.	92626.

* In person-years

* In thousands of dollars

TABLE 22

REGION 6 - ALBERTA

Percentage Changes

SECTOR	EMPLOYMENT	OUTPUT	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO P. O. W.	
1	.0004	.0000	.0019	.0020	-.0133	.0003	.0003	
2	.0044	.0034	.0059	.0095	.0012	.0030	.0008	
3	-.0013	-.0004	.0002	.0008	.0000	.0010	.0010	
4	.0007	.0001	.0021	.0024	-.0014	-.0016	-.0010	
5	.0040	.0026	.0055	.0076	.0008	.0020	.0025	
6	-.1747	-.1268	-.1735	-.1713	-.2038	.0434	.0689	
7	-.2261	-.1787	-.2249	-.2221	-.5403	.0738	.0747	
8	-.0219	-.0157	-.0205	-.0178	-.0320	.0308	.0330	
9	.0010	.0009	.0025	.0095	-.0026	.0042	.0042	
10	-.0340	-.0259	-.0326	-.0293	-.0330	.0072	.0081	
11	.0029	.0010	.0044	.0050	-.0156	.0027	.0029	
12	-.0352	-.0233	-.0337	-.0317	-.0013	.0344	.0379	
13	-.0164	-.0082	-.0149	-.0139	-.0231	.0261	.0245	
14	-.0252	-.0138	-.0238	-.0225	-.0152	.0270	.0681	
15	-.0415	-.0325	-.0401	-.0364	-.0497	.0142	.0684	
16	.0074	.0058	.0089	.0130	.0030	.0093	.0572	
17	-.0124	-.0071	-.0109	-.0095	.0009	.0069	.0026	
18	-.0015	-.0008	.0000	.0012	-.0080	.0013	.0012	
19	-.0850	-.0354	-.0837	-.0830	-.0835	.0425	.0022	
20	-.0135	-.0110	-.0120	-.0073	-.0215	.0144	.0702	
21	.0034	.0025	.0049	.0080	.0000	.0000	.0000	
22	.0023	.0012	.0038	.0050	-.0005	.0056	.0013	
23	-.0053	-.0028	-.0038	-.0026	-.0867	.0114	.0000	
24	-.0012	-.0003	.0003	.0006	.0278	.0007	.0007	
25	.0016	.0011	.0031	.0053	-.0661	.0320	.0614	
26	.0025	.0018	.0040	.0067	.0002	.0023	.0018	
27	.0002	.0000	.0017	.0019	.0279	.0000	.0000	
28	.0030	.0015	.0045	.0056	-.0185	.0137	.0000	
Total		.0000	-.0006	.0008	.0017	-.0076	.0007	.0025
Manufacturing								
Total		-.0179	-.0069	-.0183	-.0186	-.0147	.0141	.0232

TABLE 23

Industry Category: British Columbia

1. Agriculture
2. Forestry
3. Fishing, hunting and trapping
4. Mines, quarries and oil wells
5. Food and beverage industries
6. Rubber and plastics products industries
7. Leather, textile, knitting and clothing industries
8. Wood industries
9. Furniture and fixture industries
10. Paper and allied and petroleum industries
11. Printing and publishing industries
12. Primary metal industries
13. Metal fabricating industries
14. Machinery industries
15. Transportation equipment industries
16. Electrical products industries
17. Non-metallic mineral products industries
18. Petroleum and coal products industries
19. Chemical and chemical products industries
20. Miscellaneous manufacturing industries
21. Construction industry
22. Transportation and storage
23. Communication
24. Electrical power, gas and other utilities
25. Wholesale trade
26. Retail trade
27. Owner occupied dwellings
Other finance, insurance and real estate
28. Institutions and commercial services

TABLE 24

REGION 7 - BRITISH COLUMBIA

Control Solution

SECTOR	EMPLOYMENT *	OUTPUT *	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	21000.	401813.	217360.	163840.	33814.	14341.	10441
2	27690.	1277860.	494276.	109647.	6272.	8927.	19197
3	3840.	103898.	69580.	45757.	0.	7308.	29007
4	13900.	1034641.	674076.	462844.	38583.	138925.	638333
5	18307.	1206060.	336202.	132066.	227483.	63903.	107357
6	1194.	37521.	16419.	4712.	5938.	1096.	685
7	4331.	101818.	42781.	8073.	36172.	7463.	320
8	44866.	2063938.	710974.	126691.	319956.	739182.	448142
9	2039.	61519.	26518.	5885.	4663.	1063.	803
10	20768.	1577300.	757193.	423399.	107098.	547972.	690080
11	6494.	185055.	102329.	24283.	9381.	2052.	1126
12	7686.	477766.	174060.	69908.	94836.	176758.	96895
13	9902.	428127.	187641.	61662.	74759.	21675.	13665
14	5454.	197267.	88585.	12210.	27365.	41374.	2031
15	8660.	371367.	129527.	15262.	89834.	34811.	45031
16	3218.	113530.	41753.	6023.	19486.	3499.	1755
17	4373.	186736.	89940.	30196.	12490.	9071.	1697
18	1081.	420904.	46142.	29608.	15502.	6101.	13
19	3086.	187397.	73960.	38117.	25524.	25245.	157
20	2440.	54163.	26713.	2620.	2835.	951.	516
21	49900.	3270389.	1450400.	386794.	0.	0.	0.
22	68366.	1743321.	908973.	274678.	5860.	2219.	2882
23	23577.	523469.	402608.	160342.	6294.	1090.	548
24	10957.	374410.	315276.	218394.	296.	11492.	3
25	44083.	1122208.	800041.	246611.	2297.	617.	369
26	107517.	1531672.	1073043.	296937.	3077.	1447.	1799
27	43000.	2791478.	1784011.	1241113.	0.	0.	0
28	233600.	2105931.	1375049.	631969.	457.	51.	0.
Total	791329.	23951558.	12415427.	5229638.	1160270.	1868633.	2112870.
Manufacturing	143899.	7670468.	2850735.	990713.	1063320.	1682217.	1410272.
Total							

* In person-years

* In thousands of dollars

TABLE 25
REGION 7 - BRITISH COLUMBIA

Percentage Changes							
SECTOR	EMPLOYMENT	OUTPUT	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. D. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	.0018	.0004	.0044	.0047	-.0054	.0005	.0004
2	.0012	.0009	.0038	.0073	-.0009	.0001	.0001
3	.0035	.0012	.0061	.0066	.0000	-.0026	-.0026
4	-.0001	.0000	.0025	.0030	-.0058	.0001	.0001
5	.0067	.0052	.0113	.0128	.0029	.0035	.0031
6	-.1123	-.0514	-.1100	-.1078	-.0559	.0136	.0061
7	-.0463	-.0377	-.0438	-.0397	-.0450	.0399	.0072
8	-.0010	-.0006	.0016	.0063	-.0056	.0010	.0010
9	-.0435	-.0340	-.0410	-.0374	-.0305	.0048	.0066
10	.0021	.0009	.0047	.0055	-.0169	.0018	.0019
11	-.0228	-.0175	-.0203	-.0171	-.0242	.0118	.0041
12	-.0101	-.0061	-.0076	-.0061	-.0314	.0103	.0109
13	.0309	-.0208	-.0283	-.0264	-.0415	.0335	.0388
14	-.0484	-.0419	-.0459	-.0399	-.0620	.0110	.0124
15	.0050	.0044	.0076	.0152	.0003	.0074	.0073
16	-.0636	-.0547	-.0612	-.0556	-.0770	.0194	.0197
17	-.0087	-.0058	-.0062	-.0042	-.0199	.0080	.0008
18	.0033	.0012	.0059	.0065	-.0022	.0017	.0007
19	-.0578	-.0284	-.0554	-.0545	-.0425	.0476	.0017
20	-.0134	-.0121	-.0109	-.0017	-.0237	.0074	.0026
21	.0028	.0021	.0054	.0082	.0000	.0000	.0000
22	.0026	.0018	.0052	.0075	.0006	.0073	.0073
23	-.0032	-.0019	-.0006	.0009	-.0777	.0194	.0194
24	-.0014	-.0004	.0012	.0016	-.0282	-.0025	.0001
25	.0007	.0005	.0033	.0055	-.1159	.0183	.0104
26	.0025	.0018	.0051	.0077	-.0007	.0034	.0024
27	.0008	.0003	.0034	.0039	-.0283	-.0025	.0000
28	.0035	.0019	.0061	.0073	-.0189	.0118	.0000
Total		.0000	-.0008	.0020	.0040	-.0145	.0038
Manufacturing		-.0102	-.0049	-.0053	-.0013	-.0147	.0042
Total							.0029

TABLE 26

Industry Category: The Yukon and Northwestern Territories

1. Forestry
2. Fishing, hunting and trapping
3. Mines, quarries and oil wells
4. Food and beverage industries
5. Printing and publishing industries
6. Other manufacturing industries
7. Construction industries and wood industries
8. Transportation and storage
9. Communication
10. Electrical power, gas and other utilities
11. Wholesale trade
12. Retail trade
13. Other occupied dwellings
Other finance, insurance and real estate
14. Institutions and commercial services

TABLE 27
REGION 8 - YUKON & NORTHWEST TERRITORIES

Control Solution							
SECTOR	EMPLOYMENT *	OUTPUT *	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	170.	379.	247.	52.	0.	0.	0.
2	395.	4237.	3665.	2410.	0.	1921.	1446.
3	2212.	255456.	170383.	133316.	45969.	8593.	169716.
4	54.	36574.	19354.	5377.	0.	11785.	14043.
5	54.	989.	572.	91.	0.	0.	0.
6	80.	7140.	2052.	1009.	0.	0.	0.
7	834.	403575.	152861.	45399.	0.	0.	0.
8	1788.	78522.	45247.	19213.	0.	0.	0.
9	564.	3130.	3708.	1032.	0.	0.	0.
10	356.	20872.	6837.	3271.	0.	0.	0.
11	324.	14863.	10252.	3840.	0.	0.	0.
12	1518.	28587.	16323.	7331.	0.	0.	0.
13	304.	88768.	38552.	36981.	0.	0.	0.
14	4220.	43218.	26099.	9926.	0.	0.	0.
Total	12873.	986310.	496154.	269250.	45969.	22299.	185205.
Manufacturing	188.	44703.	21979.	6478.	0.	11785.	14043.
Total							

* In person-years

* In thousands of dollars

TABLE 28

REGION 8 - YUKON AND NORTHWESTERN TERRITORIES

Percentage Changes

SECTOR	EMPLOYMENT	OUTPUT	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	-.0035	-.0028	.0019	.0049	.0000	.0000	.0000
2	-.0066	-.0023	-.0011	-.0007	.0000	-.0019	-.0019
3	-.0039	-.0009	.0015	.0017	-.0066	.0000	.0000
4	-.0012	-.0009	.0042	.0063	.0000	-.0005	-.0005
5	-.0206	-.0173	-.0152	-.0111	.0000	.0000	.0000
6	-.0053	-.0027	.0001	.0009	.0000	.0000	.0000
7	-.0002	.0001	.0057	.0076	.0000	.0000	.0000
8	-.0030	-.0017	.0025	.0036	.0000	.0000	.0000
9	-.0002	-.0002	.0052	.0073	.0000	.0000	.0000
10	.0021	-.0011	.0076	.0085	.0000	.0000	.0000
11	-.0020	-.0012	.0035	.0048	.0000	.0000	.0000
12	-.0012	-.0007	.0043	.0053	.0000	.0000	.0000
13	-.0001	.0000	.0053	.0054	.0000	.0000	.0000
14	.0049	.0030	.0104	.0117	.0000	.0000	.0000
Total	.0000	-.0003	.0039	.0040	-.0066	-.0004	.0000
Manufacturing	-.0085	-.0016	.0033	.0052	.0000	-.0005	-.0005
Total							

TABLE 29
REGIONAL MACROECONOMIC DATA - ALL INDUSTRIES

Control Solution

REGION	EMPLOYMENT *	OUTPUT *	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	551363.	13339129.	6285097.	2752325.	1023490.	934243.	1160168.
2	1891038.	52437220.	24677968.	9571862.	7460252.	3018398.	1736232.
3	3019056.	89620888.	42873011.	17573892.	10867761.	9208469.	1924887.
4	349314.	8324001.	4377922.	1994981.	1202385.	291546.	541432.
5	295518.	7915449.	4883434.	3462974.	1250944.	539964.	1577398.
6	636763.	21901043.	12017819.	7455256.	3242000.	2432875.	909589.
7	791329.	23951558.	12415427.	5229638.	1160270.	1868633.	2112870.
8	12873.	986310.	496154.	269250.	45969.	22299.	185205.
CANADA	7547254.	218475598.	108026832.	48310178.	26253071.	18316427.	10147781.

TABLE
REGIONAL MACROECONOMIC DATA - MANUFACTURING

Control Solution

REGION	EMPLOYMENT *	OUTPUT *	VALUE ADDED	ECONOMIC RENT	EXPORTS TO R. O. C.	EXPORTS TO U. S.	EXPORTS TO R. O. W.
1	79814.	4247711.	1334880.	560512.	833869.	697086.	811662.
2	541500.	23985933.	7916125.	2604911.	7139166.	2803981.	1465683.
3	883730.	44807558.	15506246.	5417180.	10313518.	8787514.	1657054.
4	44518.	2577601.	773764.	255393.	936882.	235304.	204882.
5	17587.	1077446.	311453.	132471.	352068.	86157.	65031.
6	60275.	3930576.	1077688.	422567.	1310253.	349029.	92626.
7	143899.	7670468.	2850735.	990713.	1063320.	1682217.	1410272.
8	188.	44703.	21979.	6478.	0.	11785.	14043.
CANADA	1771511.	88341996.	29792872.	10390227.	21949075.	14653072.	5721253.

* In person-years

* In thousands of dollars

TABLE 30

REGION	INTER-REGIONAL TRADE FLOW - Control Solution *							EXPORTS TO U. S.	EXPORTS TO R. O. W.	EXPORTS TO R. O. C.	
1	5973917.	553886.	398361.	16956.	8947.	14724.	27938.	2678. *	934243.	1160168.	1023490
2	1054628.	23601541.	4747070.	307221.	223180.	502987.	602266.	22880. *	3018398.	1736232.	7460252
3	1376344.	5227994.	41275260.	822326.	568766.	1332067.	1497621.	42643. *	9208469.	1924887.	10867761
4	47187.	271805.	482731.	3409325.	139507.	162141.	92527.	6487. *	291546.	541432.	1202385
5	44417.	174235.	528984.	231021.	2359418.	220758.	49069.	2460. *	539964.	1577398.	1250944
6	34373.	478271.	1257199.	175879.	352671.	8457175.	848536.	95071. *	2432875.	909589.	3242000
7	43035.	168777.	263447.	91460.	98152.	470854.	10785671.	24545. *	1868633.	2112870.	1160270
8	0.	17541.	0.	5441.	0.	0.	22987.	473959. *	22299.	185205.	45969
U.S.	979693.	4521163.	11605692.	627237.	346406.	804377.	1553934.	19324.			
R.O.W.	1851917.	4304197.	2917686.	343922.	452861.	1063484.	1761195.	25143.			
R.O.C.	2599984.	6892509.	7677792.	1650304.	1391223.	2703531.	3140964.	196764. *	18316427.	10147781	24253071

TABLE TRADE BALANCES - Control Solution *

REGION	REST OF CANADA			UNITED STATES			REST OF THE WORLD		
	EXPORTS	IMPORTS	TRADE BAL	EXPORTS	IMPORTS	TRADE BAL	EXPORTS	IMPORTS	TRADE BAL
1	1023490.	2599984.	-1576494.	934243.	979693.	-45450.	1160168.	1851917.	-691743
2	7460252.	6892509.	567743.	3018398.	4521163.	-1502765.	1736232.	4304197.	-2567965
3	10867761.	7677792.	3189969.	9208469.	11605692.	-2397223.	1924887.	2917686.	-992799
4	1202385.	1650304.	-447919.	291546.	627237.	-335691.	541432.	343922.	197510
5	1250944.	1391223.	-140279.	539964.	346406.	193558.	1577398.	452861.	1124537
6	3242000.	2703531.	538469.	2432875.	804377.	1628498.	909589.	1063484.	-153895
7	1160270.	3140964.	-1980694.	1868633.	1553934.	314699.	2112870.	1761195.	351675
8	45969.	196764.	-150795.	22299.	19324.	2975.	185205.	25143.	160062
CANADA				18316427.	20457826.	-2141399.	10147781.	12720405.	-2572624

* From the region in the first column to the region in the first row

TABLE 31

TOTAL TRADE FLOW MATRIX

INTER-REGIONAL TRADE FLOW

EXPORTS
TO U. S. EXPORTS
TO R. O. W. EXPORTS
TO R. O. C.

1	-.0032	-.0354	-.0433	-.0267	-.0038	-.0117	-.0092	-.0037 *	.0045	.0042	-.0349
2	.0060	-.0118	-.0440	-.0251	.0204	.0029	-.0305	-.0180 *	.0138	.0159	-.0299
3	.0111	-.0358	-.0188	-.0096	.0148	-.0015	-.0109	.0012 *	.0161	.0300	-.0194
4	.0023	-.0160	-.0212	-.0044	-.0056	-.0161	-.0127	-.0099 *	.0121	.0051	-.0159
5	-.0028	-.0130	-.0052	-.0056	-.0021	-.0115	-.0015	-.0001 *	.0007	.0009	-.0089
6	-.0055	-.0111	-.0079	-.0134	-.0046	-.0037	-.0059	-.0029 *	.0007	.0025	-.0076
7	-.0198	-.0156	-.0192	-.0117	-.0060	-.0134	-.0045	-.0120 *	.0038	.0019	-.0145
8	.0000	-.0055	.0000	-.0108	.0000	.0000	-.0065	.0000 *	-.0004	.0000	-.0066
US	.0862	.1711	.1247	.1480	.1043	.1826	.1925	.2053			
ROW	-.0371	-.0594	-.1362	-.1206	-.0668	-.0753	-.0896	-.1055			
ROC	.0079	-.0352	-.0334	-.0126	.0071	-.0045	-.0132	-.0051 *	.0113	.0099	-.0207

TRADE BALANCES

REGION	REST OF CANADA			UNITED STATES			REST OF THE WORLD		
	EXPORTS	IMPORTS	TRADE BAL	EXPORTS	IMPORTS	TRADE BAL	EXPORTS	IMPORTS	TRADE BAL
1	-.0369	.0079	-.0370	.0045	.0862	-.17659	.0042	-.0371	.1064
2	-.0299	-.0352	.0340	.0138	.1711	-.4869	.0159	-.0594	.1104
3	-.0194	-.0334	.0143	.0161	.1247	-.5420	.0300	-.1362	.4583
4	-.0159	-.0126	.0039	.0121	.1480	-.2660	.0051	-.1206	.2239
5	-.0089	.0071	-.1458	.0007	.1043	-.1846	.0009	-.0668	.0282
6	-.0076	-.0045	-.0233	.0007	.1826	-.0892	.0025	-.0753	.5353
7	-.0145	-.0132	.0124	.0038	.1925	-.9278	.0019	-.0896	.4605
8	-.0066	-.0051	.0046	-.0004	.2053	-.13365	.0000	-.1055	.0166
CANADA				.0113	.1410	-.1.2504	.0099	-.0813	.4411

Percentage Changes

APPENDIX B

Labour Employment.

Data for the manufacturing industries are obtained from Cat. 31-203. Data which are not available or confidential are estimated from the 1971 census of Canada (Cat. 94-639), either using the data from the latter as weights or approximate data.

Data for the agricultural sector are obtained from the Labour force and Cat. 94-739.

Data for the non-manufacturing sectors are obtained from Cat. 72-516 and the aggregate data are subdivided using data from Cat. 94-739 as weights.

Data for the wholesale and retail trade for Alberta are obtained from Alberta's Retail and Service Trade Statistics, 1974.

Data for the Yukon and N.W.T.'s non-manufacturing sectors are extracted from Cat. 94-739 and Cat. 72-516.

Data for U.S. exports are first estimated from Cat. 65-003, exports by countries and then revised for consistency with the Inter-regional trade-flow data.

Imports are first estimated from Cat. 65-006. Imports by countries and then revised for consistency with the Inter-regional trade flow data. For details on the latter two categories, please consult book #1 sent from Panama City or the Blue 3-binder file.

Tax Rates are first obtained by dividing the tax margins over total demand for 1974. Tax margins and total demand used are from the I-O (current \$) for 1974. These figures are then revised for consistency with the 1974 data base.

REFERENCES

1. Adams, F.G. and N.J. Glickman. Modelling Multiregional Economic System. Lexington Books. Toronto, 1980.
2. Anastasopoulos, A. and W. Sims. "Effective Protection when Demand and Employment are Endogenous: Estimates for Quebec", Canadian Journal of Economics, XIV(2): 201-215, May 1981.
3. Anastasopoulos, A. and W. Sims. "The Regional Impact of Disintegration of the Canadian Common Market: The Case of Quebec". Southern Economic Journal 49(3): 743-763, January 1983.
4. Broadway, R. and J.M. Treddenick. A General Equilibrium Computation of the Effects of the Canadian Tariff Structure. Canadian Journal of Economics XI(3): 424-446, August 1978.
5. Cox, David and Richard Harris. Trade Liberalization and Industrial Organization: Some Estimates for Canada. Journal of Political Economy 93: 115-145, February 1985.
6. Eastman, H.C. and S. Stykolt. The Tariff and Competition in Canada. MacMillan, 1967.
7. Harris, Richard G. and David Cox. Trade, Industrial Policy, and Canadian Manufacturing. Ontario Economic Council, 1984.
8. Harris, Richard G. Applied General Equilibrium Analysis of Small Open Economies With Scale Economies and Imperfect Competition. American Economic Review 74: 1016-1032, December 1984.
9. Pinchin, Hugh McA. The Regional Impact of the Canadian Tariff. Ottawa: Economic Council of Canada, 1979.
10. Shoven, John and John Whalley. General Equilibrium With Taxes: An Existence Proof and Computational Procedure. Review of Economic Studies LX: 475-490, 1973.
11. Shoven, John and John Whalley. On The Computation of Competitive Equilibrium On International Markets With Tariffs. Journal of International Economics 4: 341-354, 1974.
12. Whalley, John. Impacts of a 50% Tariff Reduction in an Eight Region Global Trade Model. In Srinivasan, T.N. and John Whalley (eds.) General Equilibrium Trade Policy Modelling. Cambridge, Mass.: M.I.T. Press, 1986.
13. Wigle, R. General Equilibrium Evaluation of Canada-U.S. Trade Liberalization in a Global Context. University of Western Ontario, mimeograph.
14. Williams, James R. The Canadian-United States Tariff and Canadian Industry. Toronto: University of Toronto Press, 1978.